NOTES.

A MEETING was held at Stonyhurst College, on Tuesday, to consider a proposal for the establishment of some memorial of the late Father Perry. Sir Edward Watkin, M.P., presided, and he was supported by the Bishops of Salford, Shrewsbury, and Mangalore (India), Sir John Lawson, and a large body of Catholic gentry. It was resolved that the memorial should consist of a 16-inch equatorial telescope. A Committee of scientific men was appointed.

THE Town Council of Edinburgh has resolved to renew the invitation to the British Association to meet in Edinburgh in 1892.

THE Australasian Association for the Advancement of Science will hold its third annual meeting at Christchurch, New Zealand. The first general meeting will take place on January 15, 1891, at 8 p.m., when Baron F. von Müller, F.R.S., will resign the chair, and Sir James Hector, F.R.S., President-elect, will deliver an address. The railway authorities of Queensland, New South Wales, Victoria, and South Australia have consented to allow members who are going to attend the Christchurch meeting to obtain return tickets to Sydney or Melbourne at single fares; and various steamship companies have undertaken to convey members to Sydney or Melbourne and back at a reduction of 20 per cent. on the ordinary rates. Application has been made to the New Zealand Shipping Company and to the Shaw, Savill, and Albion Company for passages at reduced rates to members of the British Association visiting New Zealand to attend the meeting, and it is expected that this will be granted. Information may be obtained from Mr. A. Vaughan Jennings, 27 Chancery Lane, the local secretary in London.

THE International Medical Congress, now at work in Berlin, held its first meeting on Monday in the Renz Circus. The Berlin correspondent of the *Times* says it is calculated that no fewer than 4500 members of the medical profession were present, representing every State and city in Europe. Many also came from North and South America. The French delegates, 34 in number, were received with marked cordiality. The medical profession in England was largely represented, among those present being Sir James Paget, Sir Henry Acland, Sir Joseph Lister, Sir John Banks, Sir William Turner, of Edinburgh, Sir William Stokes, of Dublin, Prof. Grainger Stewart, of Edinburgh, Dr. Dick, Director-General of the Naval Medical Department, Mr. Ernest Hart, representing the British Medical Association, Surgeon J. K. Notter, of Netley, representing the War Office, and Dr. Lauder Brunton. The proceedings began with the opening address of the President, Prof. Virchow, who heartily welcomed to Berlin his *confrères* from all parts of the world. The President was followed by Dr. Lassar, Secretary-General of the Congress, who sketched the general plan of the labours of the Congress, and gave some interesting statistics regarding the representation of the countries taking part in it. After Herr von Gossler, Minister of Public Worship, and Herr von Forckenbeck, Burgomaster of Berlin, had welcomed the members in the name of the State and of the town of Berlin, several of the foreign delegates addressed the Congress. Dr. Hamilton, Surgeon-General of the American Army, was the first speaker. He was followed by Sir James Paget, who, on mounting the tribune, was warmly received. A paper on "The Present Position of Antiseptic Surgery," by Sir Joseph Lister, brought the proceedings to a close. At the end of the plenary sitting, the Congress resolved itself into its various Sections, which met in the halls of the Exhibition buildings in Moabit. The proceedings in the Sections on Monday were, for the most part, confined to the election of the various office-bearers. The serious work began on Tuesday.

ON July 22 Messrs. D. C. Worcester and F. S. Bournes left Minneapolis for the Philippine Islands, where they will spend two years in the study of distribution, the collection of birds and corals, and the prosecution of general zoological and botanical work. The expedition was fitted out at a cost of over $10,000, by Mr. L. F. Menage, of Minneapolis, and the collections made by Messrs. Worcester and Bournes will be deposited in the museums of the Minnesota Academy of Sciences at Minneapolis, where also the work upon the collections will be conducted after the return of the explorers.

ON Friday evening an important decision was arrived at in the House of Commons with regard to the revenue to be derived from the new duties on spirits in England. Mr. A. Acland moved that the Council of any county or county borough should receive power to use for the promotion of technical education any part of the share allotted to it, and that the remainder might be used as an educational endowment within the meaning of the Endowed Schools Act, the County Council acting as the governing body of the endowment. To the second part of this amendment—that relating to intermediate education—the Government declined to assent. The first part, however, they accepted. Mr. Mundella, Sir Lyon Playfair, and Sir Henry Roscoe expressed regret that the entire proposal of Mr. Acland was not adopted, but were unanimous in thinking that the decision of the Government, so far as it went, was most satisfactory. Sir Henry Roscoe said he wished to be allowed to say how gratified he was at the acceptance by the Goverment of the first portion of his hon. friend's amendment. To the great centres of industry which had already accepted the Technical Education Act it would be a matter of very great importance. In small places also, especially in the country, the money would be of the very greatest consequence.

DR. NANSEN'S expedition to the North Pole will start in the spring of 1892. Captain Sverdrup, who will take the nautical command, is at present on board a fishing-boat in the Polar seas, practising manœuvring among ice. Dr. Nansen wishes that his crew may consist wholly of Norwegian sailors, but will admit some foreigners among the scientific staff.

Science announces that Prof. R. S. Woodward, who was for many years chief geographer of the U.S. Geological Survey, has been appointed assistant in the U.S. Coast and Geodetic Survey. Before his connection with the Geological Survey, Prof. Woodward was assistant astronomer of the U.S. Transit of Venus Commission. He was chairman of the Section of Mathematics and Astronomy of the American Association for the Advancement of Science in 1889, and is well known for his investigations in mathematics, astronomy, and physics.

WE learn from *Science* that records have been received, at the office of the U.S. Coast and Geodetic Survey, of observations made during the last cruise of the *Pensacola*. The stations include the West Coast of Africa, and some islands in the North and South Atlantic. The work was done by an officer of the survey, Assistant E. D. Preston, aided by members of the ship's company. Gravity and magnetic measures were made at St. Paul de Loanda (Angola), Cape of Good Hope, St. Helena, Ascension, Barbadoes, and Bermuda. In addition, magnetic observations alone were made at the Azores (Fayal), Cape Verde Islands (Porto Grande), Sierra Leone (Freetown), Gold Coast (Elmina), and in Angola at Cabiri. The pendulums used in the gravity work were the ones employed in 1883 in Polynesia, and in 1887 at the summit of Haleakala and other stations in the Hawaiian Islands. The computations are now under way at the office in Washington.

PROF. HUXLEY contributed to the *Times* of Tuesday a valuable letter on medical education—the subject with which Dr. Wade had dealt in his Presidential address to the British Medical Association. In this letter Prof. Huxley urges that the scientific training of medical students, and of those who propose to become medical students, should be much more thorough and exact than it has hitherto generally been. "Those who know what modern medicine is," he says, "are well aware that four years would be but a brief period of study, even if it could be allotted exclusively to the practical branches of the medical science and art. But in the present condition of middle-class education the youth of 17 too commonly enters the medical school, not only devoid of the slightest tincture of scientific knowledge, but, what is worse, so completely habituated to learn only from books or oral teaching that the attempt to learn from things and to get his knowledge at first hand is something new and strange. Thus a large proportion of medical students spend much of their first year in learning how to learn, and when they have done that, in acquiring the preliminary scientific knowledge, with which, under any rational system of education, they would have come provided." Prof. Huxley does not, of course, underrate the importance of a proper literary training for medical students. This, with adequate instruction in science, they might, he thinks, obtain, if our methods of education were improved. The reform for which he especially pleads is that "the time wasted in forcing upon the medical student a sham acquaintance with Latin should be devoted to teaching him the use of his own language and the right enjoyment of its literary wealth, no less than to the study of science."

THE third summer meeting of the University Extension and other students began at Oxford on Friday last. At the opening meeting Prof. Max Müller delivered an address. He defended the method of teaching by means of lectures, but admitted that most lectures were too long, and recommended that they should be limited, as in Germany, to three-quarters of an hour. He also defended the annual gatherings at Oxford against the charge of being mere academical picnics. He showed how well the different classes of lectures had been arranged so as to meet the requirements of different classes of students. He pointed to the large and zealous classes attending these lectures, and to the substantial work done by students who stayed at Oxford for two or three weeks after the public lectures given during the first fortnight were over. Finally, he dwelt on the silent influence which a stay at Oxford must exercise on everyone. "I doubt not," he concluded, "that while teachers and hearers are exploring together in this place the ruins of ancient thought and the labyrinth of modern science, they will feel the silent influence of Oxford, and take to heart the lesson which our University has taught to so many generations of Englishmen, Scotchmen, and Irishmen—respect for what is old and the warmest sympathy for what is new and true."

A CONFERENCE in connection with the University Extension movement was held on Tuesday in the debating hall of the Oxford Union, Mr. Arthur Sedgwick, of Corpus Christi, presiding. There was a large attendance. The subject for discussion was—Is it desirable that local committees should seek to obtain a Treasury grant in aid of the expenses of University Extension teaching? If so, on what conditions is it desirable that the grant should be distributed? The chairman said, speaking as a private individual, and not as a delegate, he most heartily assented to the proposal to ask for State aid for University extension. It seemed to him that there was no test which they could apply in order to see whether an object was worthy of State aid which could not be successfully applied to University extension. In order that the movement might have its proper development it was absolutely necessary that there should be elements of permanence in it. Experience had shown that, at any rate with existing machinery and existing resources, it was extremely difficult to establish this element of permanence. Mr. Macan moved, "That this conference supports the proposal of State aid to University extension, provided that aid could be given without undue State interference." Mr. Mackinder seconded the resolution, which was carried by an overwhelming majority. In the evening a second conference was held in the Examination Schools, the chair being occupied by Mr. J. G. Talbot, M.P. The subjects discussed included University extension teaching in training colleges, village lectures, students' associations, and University extension teaching in connection with free public libraries.

MR. COSMO NEWBERY, the analyst of the Mines Department, Victoria, has been speaking strongly as to the necessity for a central School of Mines in Victoria. He would like that such a school should, if possible, be established in connection with the Melbourne University. If that proved to be impossible, he would be content with the development of the well-known school at Ballarat. Mr. Newbery's views on the subject are vigorously supported by the *Australian Mining Standard*, which thinks that a central school, thoroughly organized, could not fail "to exercise an important influence in the development of mining science in Australasia."

THE University College of Bristol has issued its Calendar for the session 1890–91.

A "*Bibliothèque Darwinienne*" has recently been started in Paris. The series will deal for the most part with sociological subjects. The first volume is by M. P. Combes, and relates to animal civilizations.

ADVANTAGE is being taken of the Eiffel Tower to obtain high pressure through a manometric tube (the height of the tower) containing mercury. M. Cailletet proposes to utilize the enormous pressure—about 400 atmospheres—for his researches on the liquefaction of gases, and interesting results may be looked for.

WE extract from *La Nature* of July 26 the following facts relating to exceptional seasons in past centuries. They have been collected by M. Villard, of Valence, for France especially, and for Europe generally. In 1282 the winter was so mild that cornflowers were sold in Paris in February. New wine was also drunk at Liége on August 24. In 1408 the winter was so severe that nearly all the Paris bridges were carried away by the ice. Ink froze in the pen, although a fire was in the room. [A similar fact is quoted by Dove as occurring at Sebastopol on December 13, 1855.] All the sea between Norway and Denmark was frozen. The summers of 1473 and 1474 were disastrously hot. In the winter of 1544–45 wine was frozen in barrels all over France. It was cut with hatchets and sold by the pound. In 1572–73 nearly all the rivers were frozen. The Rhone was traversed by carriages at various places. In 1585 the winter was very mild; corn was in ear at Easter, but the third week in May was extremely cold.

THE *Annalen der Hydrographie und Maritimen Meteorologie* for July contains an article by Dr. G. Meyer, on the influence of the moon on weather. Although such investigations have hitherto given a negative result, the author thought that with the materials furnished by synoptic charts he might eliminate local influences, and he gives tables extending over a number of years, which seem to show the influence of the moon in lowering the height of the barometer in the months of September to January, at the time of full moon, and in raising it during the first quarter. The Deutsche Seewarte, which communicates the article, points out that a similar result has been independently arrived at by Captain Seemann, one of the assistants of the institution. The same effect or any other is not perceptible in other months.

AN ingenious contrivance has been recently adopted at the Hippodrome in Paris, with a view to producing scenic effects, in the central oval space, without the spectators opposite being seen at the same time. An elliptical screen of fine steel netting is let down in comparative darkness, so as to be about 12 feet in front of the benches. This is painted on the inner side with a representation of the Place du Vieux Marché at Rouen (the piece being *Jeanne d'Arc*), and, as it is strongly illuminated, at a given moment, from the centre, the light outside being low, a spectator at any point has an excellent view of the scene, while seeing nothing of the crowd beyond.

The additions to the Zoological Society's Gardens during the past week include a Malbrouck Monkey (*Cercopithecus cynosurus* ♂) from West Africa, presented by Miss Florence Schuler; an American Black Bear (*Ursus americanus*) from Canada, presented by Mr. John Sands; a Common Otter (*Lutra vulgaris*) from Ross-shire, presented by the Hon. J. S. Gathorne Hardy, M.P., F.Z.S; two Cape Doves (*Œna capensis*) from South Africa, presented by Miss Grace Debenham; two Imperial Eagles (*Aquila imperialis*) from Spain, presented by Mr. Walter Buck; two Smooth Snakes (*Coronella lævis*) from Hampshire, presented by Mr. E. Penton, F.Z.S; a Hairy Armadillo (*Dasypus villosus*) from La Plata, a Greater Sulphur Crested Cockatoo (*Cacatua galerita*) from Australia, deposited; five Common Peafowls (*Pavo cristatus*), six Ring-necked Pheasants (*Phasianus torquatus*), three Gold Pheasants (*Thaumalea picta*), five Silver Pheasants (*Euplocamus nycthemerus*), seven Californian Quails (*Callipepla californica*), a Vulpine Phalanger (*Phalangista vulpina* ♀) bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

Objects for the Spectroscope.

Sidereal Time at Greenwich at 10 p.m. on August 7 = 19h. 5m. 29s.

Name.	Mag.	Colour.	R.A. 1890.	Decl. 1890.
			h. m. s.	° ′
(1) G.C. 4485	—	—	19 12 17	+29 53
(2) G.C. 4499	—	—	19 26 19	+ 9 0
(3) D.M. + 30° 3409 ...	6	Yellowish-red.	19 0 43	+30 34
(4) ε Aquilæ	4	Yellow.	18 54 36	+14 55
(5) λ Aquilæ	3	Yellowish-white.	19 0 24	− 5 3
(6) 222 Schj.	9	Very red.	18 53 30	+14 13
(7) S Herculis	Var.	Reddish-yellow.	16 46 53	+15 8

Remarks.

(1) This cluster is thus described in the General Catalogue: "A globular cluster; bright; large; irregularly round; gradually very much compressed in the middle; easily resolved." Dr. Huggins has observed that the spectrum is continuous, with "a suspicion of unusual brightness in the middle," but he apparently made no attempt to determine the position of the brightness. Such a maximum of light in one part of the spectrum is suggestive of radiation phenomena, though of course it is possible that it may be simply a contrast effect due to the presence of dark lines or bands. In any case trustworthy measures may give some clue to the constitution of the stars of which the cluster consists.

(2) The G.C. description of this object is as follows: "Considerably bright; small; irregularly round; easily resolvable." It is thus apparently an undoubted cluster, and it is therefore very remarkable that Dr. Huggins records: "I believe that the spectrum consists of one bright line." If this be confirmed, the object must evidently be a cluster of "nebulous stars," and resolvability can no longer be a criterion for non-nebulosity."

(3) Dunér describes the spectrum of this star as a feebly-developed one of Group II.; only the bands 2, 3, and 7 being seen. As the complete series of bands has been recorded in stars of much smaller magnitude with the same instruments, it is clear that there are decided specific differences. A more detailed examination, with special reference to the presence or absence of bright lines or flutings and dark lines, is suggested.

(4 and 5) These are stars of the solar type and of Group IV. respectively. The usual observations are required in each case.

(6) The spectrum of this star is one of Group VI. The dark bands are strong, but the blue zone is very feeble. Further details should be looked for.

(7) This variable has a spectrum of Group II., and the approaching maximum of August 15 may be utilized for ascertaining whether, in common with other variables of the same group, bright lines appear at or near maximum. The magnitude at maximum appears to vary between 6·6 and 7·7, whilst that at minimum is about 11·5, the period being about 408 days. The line of hydrogen at G is apparently the most easily seen in this class of objects. The bright flutings of carbon should also be carefully observed as the star fades.

A. Fowler.

Catalogue of Red Stars.—No. V. of the Cunningham Memoirs of the Royal Irish Academy contains a new edition of Birmingham's "Catalogue of Red Stars," by the Rev. T. E. Espin. The work undertaken by Mr. Espin is (1) the observation of such stars of Mr. Birmingham's Catalogue as seemed to merit special attention; (2) a search for new red stars; (3) the spectroscopic observation of all stars not previously observed with the spectroscope. This comprehensive programme was commenced about four years ago, and much important work has been done under each of the heads. The original catalogue contained ruddy and orange stars in addition to those having a decided red colour, but these are now given in a separate list.

In some remarks on the spectroscopic observations of the stars in the Catalogue, Mr. Espin brings forward "one of the most striking examples of the disagreements among spectroscopic observers," viz. the difference between the spectrum of 152 Schjellerup as observed by Secchi and Dr. Huggins. The former observer remarked that the dark zones coincided with the carbon flutings given by an alcohol flame. Dr. Huggins made the comparison, and, either from imperfect instrumental conditions or a different comparison spectrum, found there was no such coincidence, although later observations, by Vogel, Dunér, and others, have established Secchi's view.

A useful list is given of stars with bright lines in their spectra discovered up to the date of publication, and no one has worked more assiduously in this direction than Mr. Espin himself. After an admirable and extended account of the discovery and the spectra of these stars the following conclusions are arrived at:—

(1) That in stars of type I.*c* (Group I.) where the hydrogen lines and D_3 are bright, the lines vary, and this variation is not simultaneous.

(2) That in stars with type III.*c* one or more of the hydrogen lines may be brilliant and the others invisible, as in Mira, where γ and δ were conspicuous, but there was no trace of ε and F.

(3) In the cases of R Andromedæ, R Cygni, and S Cassiopeiæ, the extremely brilliant F line was detected *after* the maximum.

(4) In Vogel's type I.*b*, the hydrogen lines may really be faintly bright, and in one of the stars of this class the existence of other bright lines is proved, and they will hence, probably, be found in others.

It should be remarked that the stars of Group II. which have bright lines in their spectra (*e.g.* Mira Ceta) are classified by Mr. Espin as a new type, III.*c*.

The total number of stars contained in the Catalogue is 1472, of which 766 are given in the red star catalogue, 629 in the list of ruddy stars, and 77 in an addendum. Besides these there are 52 "bright-line" stars. Seven new variables were detected by Mr. Espin during the four years of observation, and he concludes that the work of discovering new red stars in the northern heavens is complete as far as magnitude 8·5. Every spectroscopist appreciates this valuable and important Catalogue, and Mr. Espin is to be congratulated on having been able to complete it in so short a time.

Ancient Eclipses.—In the *Astronomical Journal*, No. 220, Mr. John Stockwell continues his discussion of the secular and long-period inequalities in the moon's motion. The following are the dates of the sixteen eclipses that have been investigated, and some particulars referring to them.

No.	Date.	No.	Date.
1.	A.D. 1140 March 20	9.	B.C. 480 April 19
2.	A.D. 1030 August 30	10.	B.C. 546 October 23
3.	A.D. 364 June 16	11.	B.C. 556 May 19
4.	A.D. 360 August 28	12.	B.C. 584 May 28
5.	A.D. 348 August 29	13.	B.C. 602 May 18
6.	B.C. 309 August 15	14.	B.C. 609 September 30
7.	B.C. 423 March 21	15.	B.C. 762 June 15
8.	B.C. 430 August 3	16.	B.C. 1184 August 28

1. This eclipse is mentioned by Halley, by William of Malmesbury, and in the Saxon Chronicle. It is shown that the line of central eclipse passed over Cambridge.